Telex Magnetic Tape Drive Test

The period of the test started at 1100 hours on
9 September and ended at 0700 hours on 7 October 1969.
It must be noted that these tests were run in a computer
center where there is only one (1) scheduled operating
shift. It should also be noted that test programs one
(1) through four (4) were written to run under IBM's
operating system (Version 17, MVT), and the computer
center where these tests were conducted does not run
IBM's operating system during the entire operating
shift. Test program five (5) is called a stand alone
program, supplied by IBM. The program is called DASDI/
DUMP-RESTORE.

I. Tests Conducted on Telex Drives.

   A. Reading & Writing Speed

II. Physical Dimensions

   A. Telex
   B. IBM

III. Price

   A. Telex
   B. IBM

IV. Advantages

   A. Telex
   B. IBM

V. Disadvantages

   A. Telex
   B. IBM

VI. Problems Encountered While Testing Telex Drives

VII. Time Used on Telex Drives

VIII. Maintenance Calls

I. There were five (5) tests conducted on the Telex tape
    drives to test their efficiency and performance.

TELEX TEST 1

Function: TAPE TO TAPE FORWARD

Description: This program reads data from an input tape
              and writes the data to an output tape one
              record at a time. Program will end normally
              at end of data.

TELEX TEST 2

Function: READ, INCREMENT BY ONE, REREAD

Description: Sets a counter to 1 then reads and writes
              the number of times specified in counter.
              Counter is incremented by one each time
              through the loop and then the read begins
              with record one. Program will ask for
              continuation or end at end of data.

TELEX TEST 3

Function; TAPE TO TAPE FORWARD & REVERSE

Description: This program reads one record and writes
              one record at a time. Processing continues
              to end of data at which time the tapes are
              logically switched as to input and output
              attributes. This will continue until
              canceled by operator.

TELEX TEST 4

Function: TAPE TO TAPE BACKWARDS

Description: This program reads the input tape backwards
              one record at a time and writes it on output
              tape. Program ends at end of data.

TELEX TEST 5

Function: TAPE TO DRUM

Description: This program reads data from an input tape
              and writes the data to the 2303 magnetic
              drum. Program will end normally at end of
              data.

   A.   The reading and writing on the Telex drives did
       not noticeably seem to be any faster or slower
       than the IBM drives.

II. Physical Dimensions

*A. Telex

1. Height - 70" (71" including hinge on top of rear door)
2. Width - $31\frac{1}{4}$"
3. Depth - $33\frac{1}{2}$"
4. Weight - 750 lbs. (maximum)

**B. IBM

1. Height - $66\frac{1}{2}$"
2. Width - 59 3/4"
3. Depth - 29 3/4"
4. Weight - 1600 lbs.

* The Telex magnetic tape drives are individual units; one (1) magnetic tape drive equals one (1) unit. Unit is 4832 series, nine channel.

**The IBM magnetic tape drives have two (2) drives per one (1) unit. Unit is 2402 series, nine channel.

NOTE: The explanations above (* and **) account for the reason why IBM drives are twice as wide and heavy as the Telex drives.

III. Price

A. Telex

1. Rental is $1040 for two (2) magnetic tape drives.
2. There is no limit to the number of hours that can be used on the Telex drives for a monthly period.

B. IBM

1. Rental is $1570 for one (1) unit. (Two (2) magnetic tape drives.)
2. Rental is based on a 176 hour monthly period, anything over 176 hours is extra.

IV. Advantages

    A. Telex

        1. Cost less
        2. Weigh less
        3. Fewer capstans (rollers) for tape to go around
        4. Easier on tapes (smooth & even running of tape)
        5. Tape is air driven
        6. When tape is unloaded, it is rewound all the
           way off of the take up reel
        7. Fewer parts to clean
        8. Computer installations, using ten (10) or more
           tape drives, can rent an additional unit at
           half ($\frac{1}{2}$) price for use as a spare.
        9. No limit to the amount of time used on drives.

    B. IBM

        1. Don't have to be cleaned as often
        2. Automatic unloading window
        3. Units are immobile once they are installed;
           that is, they do not rest on rollers
        4. One floor cut panel for one (1) unit, two (2)
           drives
        5. Loads & unloads tape quicker
        6. Rewinds faster

V. Disadvantages

A. Telex

1. When tape is loaded, air pressure from unit causes a high whine.
2. Units are mobile once they are installed; that is, they rest on rollers.
3. Windows on units should not be closed all the way up when there is no tape mounted, because this causes vacuum motor to run and possibly burn out motor.
4. Window is not automatic, must be lowered and raised by operator.
5. Capstan rollers are turning all the time.
6. Each drive needs a floor cut panel.
7. Slow loading, unloading & rewinding
8. Must be cleaned more often than IBM (sensitive) and two different types of cleaner must be used

B. IBM

1. There are more capstans (rollers) which could result in more wear on tapes.
2. When tape is unloaded, tape must be rewound off the take up reel by the operator.
3. More parts to clean.
4. Limit of 176 hours; anything over 176 constitutes an additional charge.

VI.   Problems Encountered after Telex Drives were Installed

Problem 1 - This problem was never pin pointed as being
a Telex tape drive problem, but it only
happened after the drives were installed.
383 and 384 are the Telex drives; when
the operating system asked for unit 383
to be mounted, the operator made the unit
READY but nothing happened. The operator
then questioned the system as to what it
was waiting for, and the system responded
with - UNIT 383. This meant it was waiting
for 383 to become READY, which it already
was. As was stated earlier, no definite
solution was made as to the problem being
a tape unit problem.

Problem 2 - The main problem encountered with the drives
was that drive 383, while reading backwards,
would hang up in the SELECT status. Not
only did it hang up the tape drive, it also
caused that channel to hang up and eventually
the operating system. Several days were
used to try and correct this error. Transistor
cards were swapped between 383 and 384 to
see which card was bad. After two and a
half days of testing, (not all day) the bad
card was found and replaced. Computer time
had to be given to the Telex engineer during
certain periods of these $2\frac{1}{2}$ days so he
could check out the units. Also the units
were taken offline, so that the Telex
engineer could replace certain parts. This
meant that we only could use 3 of our 5
tape drives, and were not able to run our
tests as much.

Problem 2 in Section VI Breakdown

On 24 September problem 2 was encountered and the call was made to the Telex engineer at 1230. The engineer did not come until 1600 because he couldn't get time to work on the unit until 1600.

On 25 September problem 2 was encountered at 0710. The Telex engineer called the computer center a few minutes later and was told the problem had returned. At 0845 engineers arrived and at 0908 units 383 and 384 were taken offline (disconnected from channel). At 1617 units were given back to us so we could resume our tests to see if unit would fail.

On 26 September problem 2 was encountered at 1130. Engineer was already at computer center and checked units. Cards were swapped between 383 and 384 to try and determine if there was a bad card.

On 29 September at 0715 problem 2 returned. Units 383 and 384 were taken offline from 0815 to 0900. After several components in 383 had been changed and switching transistor cards from 383 and 384, a bad card was found and replaced.

360 Time Used by Telex Engineer (Not Meter Time)

September 24	1642 - 1705	23 minutes
September 25	1150 - 1205	15 minutes
	1535 - 1617	42 minutes
September 26	1130 - 1152	22 minutes
	1549 - 1600	11 minutes
September 29	0835 - 0900	25 minutes
	0950 - 1155	116 minutes

4 hrs. 14 mins.

During these periods of time the Telex engineer was either running his diagnostics or running Telex Test 4 to get the unit to fail. This time was all used to correct problem 2 in section VI. The units hanging up in SELECT were stated as being a known problem by Telex, but it is usually a stuck valve. In problem 2 it turned out to be a bad transistor card.

VII. Time Used on Telex Drives

Process time is the time that the tape drive was actually reading or writing tape.

Elapse time is the time the tape drive was powered up until the time it was powered down.

Unit 383 - 3023 GA

September 9 at 1100	Process Start 00408	Elapse Start 00544
October 7 at 0700	Process Stop 00712	Elapse Stop 03194
Total Time	Process - 30.4 Hrs.	Elapse - 265.0 Hrs.

Unit 384 - 3024 GA

September 9 at 1100	Process Start 00508	Elapse Start 00794
October 7 at 0700	Process Stop 00742	Elapse Stop 03450
Total Time	Process - 23.4 Hrs.	Elapse - 265.6 Hrs.

The time for the tests is based on 20 nine-hour working days. A total of 180 working hours. Of this 180 hours, 16 hours were used by IBM for maintenance of the computing system. Another 72 hours were used to load, run, and unload SDC's (System Development Corporation) Adept System. This system has nothing to do with IBM's operating system; therefore, we were unable to run our tape tests during these hours. This left a total of 92 hours which could possibly be used to run the tape tests.

Time for tests

    20 days
     9 hours each day
  180 total hours

  180 total hours
   16 IBM maintenance
   72 SDC Adept System
   92 hours possible for tests

    The longest running by one of the Telex Test programs
was Telex Test 2. This program ran continuously for three
(3) hours before test had to be canceled by operator.

VIII. Maintenance Calls

Whenever a call was placed to the Telex Corporation, an engineer responded within half an hour. They were always willing to help us with any problems that we might have concerning drives. I felt that we could depend upon their service whenever it was needed. This does not mean that we will get the same type of service if we rent the units.